

**Claims**

What is claimed is:

1. A method for automating application of a chemical to a target through a liquid dispenser having a dosage cycle during which liquid is dispensed therefrom, the chemical being provided by a solid chemical source, the liquid dispenser being coupled to a liquid source providing at least a portion of the liquid, the target having a target area, the method comprising:

determining an amount of the chemical to be applied to the target, based on the target area;

receiving a mixing liquid from the liquid source;

applying the mixing liquid to the solid chemical source to create a sump mixture containing the mixing liquid and the amount of the chemical; and

distributing, during at least a portion of at least one run time of a sprinkler control system, the sump mixture flowing through the liquid dispenser to an output of the sprinkler control system, wherein the sump mixture is mixed with the output of the sprinkler control system and is delivered via the sprinkler control system to the target.

2. The method of claim 1, wherein the applying step further comprises calibrating the sump mixture to adjust a concentration of the sump mixture.

3. The method of claim 2, wherein the calibrating step further comprises automatically performing the calibration by measuring a refractive index of the sump mixture.

4. The method of claim 2, wherein the calibrating step further comprises performing the calibration using a colorimetric system.

5. The method of claim 2, wherein the calibrating step further comprises performing the calibration using a conductivity system.

6. The method of claim 1, wherein the determining step further comprises dividing the target into a plurality of zones.
7. The method of claim 6, wherein the distributing step further comprises:
  - measuring the run time for each of the plurality of zones;
  - defining the dosage cycle based on the run time; and
  - dispensing the sump mixture within the dosage cycle.
8. The method of claim 7, wherein the distributing step further comprises positioning the dosage cycle as a specific portion of the run time.
9. The method of claim 6, wherein the determining step further comprises tailoring the sump mixture based on the specific needs of each of the plurality of zones.
10. The method of claim 1, further comprising adjusting the sump mixture based on input from at least one add-on component.
11. The method of claim 1, wherein the determining step further comprises comparing a total previous application amount to a desired application amount to formulate the sump mixture.
12. The method of claim 1, wherein the determining step further comprises:
  - selecting from a plurality of chemicals; and
  - accessing data relevant to each of the plurality of chemicals.
13. The method of claim 12, wherein the selecting step further comprises mixing two or more of the plurality of chemicals.

14. An automatic chemical application system for automating application of a chemical to a target through a liquid dispenser having a dosage cycle during which liquid is dispensed therefrom, the chemical being provided by a solid chemical source, the liquid dispenser being coupled to a liquid source providing at least a portion of the liquid, the target having a target area, the system comprising:

    a computing module that determines an amount of the chemical to be applied to the target, based on the target area;

    a mixing module coupled to the computing module that receives a mixing liquid from the liquid source and applies the mixing liquid to the solid chemical source to create a sump mixture containing the mixing liquid and the amount of the chemical; and

    a dispensing module coupled to the mixing module and a sprinkler control system, wherein the dispensing module distributes, during at least a portion of at least one run time of the sprinkler control system, the sump mixture through the liquid dispenser to an output of the sprinkler control system, wherein the sump mixture is mixed with the output of the sprinkler control system and is delivered via the sprinkler control system to the target.

15. The system of claim 14, further comprising an application module coupled to the mixing module, wherein the application module calculates a total previous application amount, compares the total previous application amount and a desired application amount, and automatically adjusts the mixture application amount based on the comparison.

16. The system of claim 15, wherein the application module maintains the total previous application amount for a given duration.

17. The system of claim 14, wherein the target is divided into a plurality of zones.

18. The system of claim 17, further comprising a zone control module coupled to the dispensing module, wherein the zone control module maintains a plurality of zone parameters associated with each of the plurality of zones.
19. The system of claim 17, further comprising a cycle control module coupled to the dispensing module, wherein the cycle control module calculates the dosage cycle as at least a portion of the run time of the plurality of zones.
20. The system of claim 19, wherein the dosage cycle is positioned at an initiation of the run time for each of the plurality of zones.
21. The system of claim 19, wherein the dosage cycle is positioned at an end of the run time for each of the plurality of zones.
22. The system of claim 14, further comprising an add-on interface control coupled to the dispensing module, wherein the add-on interface control is operable to communicate with at least one add-on component.
23. The system of claim 22, wherein the sump mixture is adjusted based on an input from the add-on component.
24. An automatic chemical application system for automating application of an agricultural chemical to an agricultural target through a liquid dispenser having a dosage cycle during which liquid is dispensed therefrom, the agricultural chemical being provided by a solid chemical source, the liquid dispenser being coupled to a water source providing at least a portion of the liquid, the agricultural target having a target area, the system comprising:
  - a computing module that determines an amount of the agricultural chemical to be applied to the agricultural target, based on the target area;

a mixing module coupled to the computing module that receives water from the water source and applies the water to the solid chemical source to create a sump mixture containing water and the amount of the agricultural chemical; and

a dispensing module coupled to the mixing module and a sprinkler control system, wherein the dispensing module distributes, during at least a portion of at least one run time of the sprinkler control system, the sump mixture through the liquid dispenser to an output of the sprinkler control system, wherein the sump mixture is mixed with the output of the sprinkler control system and is delivered via the sprinkler control system to the agricultural target.

25. A method for automating application of a chemical to a target through a liquid dispenser having a dosage cycle during which liquid is dispensed therefrom, the chemical being provided by at least one solid chemical source, the liquid dispenser being coupled to a liquid source providing at least a portion of the liquid, the target having a target area, the method comprising:

providing parameters associated with the target;

determining an amount of the chemical to be applied to the target, based on the parameters;

receiving a mixing liquid from the liquid source;

applying the mixing liquid to the solid chemical source to create a sump mixture containing the mixing liquid and the amount of the chemical; and

distributing the sump mixture flowing through the liquid dispenser to the target.

26. The method of claim 25, wherein the step of providing parameters further comprising providing parameters including size and soil condition of the target.

27. The method of claim 25, wherein the step of determining an amount further comprises determining an amount of fertilizer, herbicide, and pesticide to be applied to the target.

28. The method of claim 25, further comprising mixing chemicals from multiple solid chemical sources to create the sump mixture.